

Application No. 09/473,638
Attorney Docket No. 15-IS-5286
Amendment dated February 10, 2005
Reply to Office Action of December 10, 2004

REMARKS AND ARGUMENTS

The present application includes claims 1, 3-8, 10-15 and 17-20. Claims 1, 3-8, 10-15 and 17-20 were rejected in the December 10, 2004 Office Action.

Claims 1, 3-7, 10-14 and 17-20 were rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 7-12 and 14 of Patel et al. (U.S. Patent No. 6,529,757, the “‘757 patent”.)

Claims 8 and 15 were rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 7-12 and 14 of the ‘757 patent in view of Huang. (*PACS: Basic Principles and Applications.*)

Claims 1, 3-7, 10-14 and 17-20 were rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6, 8 and 10 of Patel et al. (U.S. Patent No. 6,526,304, the “‘304 patent”.)

Claims 8 and 15 were rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6, 8 and 10 of the ‘304 patent in view of Huang. (*PACS: Basic Principles and Applications.*)

Claims 4, 6, 11, 13, 18 and 20 were objected to. However, the basis for the Examiner’s objection is unclear.

Claims 1, 3, 5, 7, 8, 10, 12, 14, 15, 17 and 19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Huang.

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Claims 4, 6, 11, 13, 18 and 20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Huang in view of Takeo et al. (U.S. Patent No. 6,231,246.)

Double Patenting Rejections

The Applicant first turns to the rejection of claims 1, 3-7, 10-14 and 17-20 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 7-12 and 14 of the '757 patent. While the Applicant does not agree with several of the Examiner's assertions on pages 3-7 of the December 10, 2004 Office Action, in the interest of moving the pending application to allowance, the Applicant submits a Terminal Disclaimer with this Amendment. Both the '757 patent and the present application are commonly owned by General Electric Company. Therefore, the Applicant respectfully submits that claims 1, 3-7, 10-14 and 17-20 should be allowable.

The Applicant next turns to the rejection of claims 8 and 15 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 7-12 and 14 of the '757 patent in view of Huang. While the Applicant does not agree with several of the Examiner's assertions on pages 3-7 of the December 10, 2004 Office Action, in the interest of moving the pending application to allowance, the Applicant submits a Terminal Disclaimer with this Amendment. Both the '757 patent and the present application are commonly owned by General Electric Company. Therefore, the Applicant respectfully submits that claims 8 and 15 should be allowable.

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The Applicant next turns to the rejection of claims 1, 3-7, 10-14 and 17-20 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6, 8 and 10 of the '304 patent. While the Applicant does not agree with several of the Examiner's assertions on pages 7-10 of the December 10, 2004 Office Action, in the interest of moving the pending application to allowance, the Applicant submits a Terminal Disclaimer with this Amendment. Both the '304 patent and the present application are commonly owned by General Electric Company. Therefore, the Applicant respectfully submits that claims 1, 3-7, 10-14 and 17-20 should be allowable.

The Applicant next turns to the rejection of claims 8 and 15 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6, 8 and 10 of the '304 patent in view of Huang. While the Applicant does not agree with several of the Examiner's assertions on pages 7-10 of the December 10, 2004 Office Action, in the interest of moving the pending application to allowance, the Applicant submits a Terminal Disclaimer with this Amendment. Both the '304 patent and the present application are commonly owned by General Electric Company. Therefore, the Applicant respectfully submits that claims 8 and 15 should be allowable.

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Objections

The Applicant next turns to the Examiner's objection to claims 4, 6, 11, 13, 18 and 20. The Examiner stated in the Office Action that "[c]laims 4, 6, 11, 13, 18 and 20 are objected to because of the following informalities: the terms RN, RE, RT, GT, GA, GC and GS are not defined. Appropriate correction is required." (Dec. 10, 2004 Office Action, page 10.) The Examiner did not provide any other basis for the objection.

The basis for the Examiner's objection is unclear to the Applicant. On one hand, the Examiner states that the terms RN, RE, RT, GT, GA, GC and GS need to be defined. However, on the other hand, the Examiner repeatedly makes the following statement throughout the Office Action:

[T]he patented claims do not specify RN, RE, RT, GT, GA, GC, or GS preprocessing parameters. However, as indicated by Applicants on page 5, lines 26-33, these preprocessing parameters are the industry standard FUJI Computed Radiography modality preprocessing functions. Therefore, it would have been obvious to have modified the preprocessing parameters to specify RN, RE, RT, GT, GA, GC, or GS.

(Dec. 10, 2004 Office Action, pages 6-7 and 10; *see also* page 14.) Therefore, it is unclear to the Applicant why the present claims are objected to. On the one hand, the Examiner appears to object to the claims because they are indefinite. On the other hand, the Examiner claims that the elements of the claims are well known in the art. The Applicant therefore requests clarification on the basis for the Examiner's objection.

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Rejections Under 35 U.S.C. § 103(a)

Claims 1, 3, 5, 7, 8, 10, 12, 14, 15, 17 and 19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Huang. In the Examiner's Response to Arguments in the Office Action, the Examiner asserted that section 8.8.2, pages 225-226 of Huang discloses the application of preprocessing functions at a workstation. (Dec. 10, 2004 Office Action, page 15.) The Applicant apologizes for inadvertently misquoting the Examiner's statement in the Office Action, but continues to assert that Huang only discloses the application of preprocessing functions at an acquisition workstation and not at a display workstation.

First, none of the sections cited by the Examiner provide any support for the assertion that Huang teaches or suggests the application of a preprocessing function to image data at a display workstation. For example, the section of Huang cited by Examiner (section 8.8.2) for the assertion that "at least one of the preprocessing functions is applied to the partially preprocessed raw image data at a workstation" is a subsection limited to the discussion of an acquisition workstation. For example, chapter 8 of Huang is entitled "image acquisition gateway" and explains the acquisition gateway/workstation of a PACS. (Huang, page 199.) In addition, section 8.8 of Huang describes the functionality of an acquisition workstation, and more specifically, "multilevel adaptive processing control in the image acquisition gateway." (Huang, section 8.8, page 224.) Section 8.8.2 is a subsection of section 8.8, which in turn is a subsection of chapter 8 of Huang. Therefore, while a single sentence cited by the Examiner may generically refer to "a workstation," in the section of Huang from which this phrase is taken, "a workstation" can only refer to an acquisition gateway/workstation of a PACS.

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More specifically, section 8.8.2 of Huang describes "data flow of CR images in PACS", which is an example of "sequential operations of intertwined computational processes" in operation "[a]t the acquisition gateway computer." (Huang, section 8.8.1, pages 224-225.) In other words, section 8.8.2 of Huang cannot describe the application of preprocessing functions at a generic workstation, but instead is limited to describing the application of preprocessing functions at an acquisition workstation. There is absolutely no disclosure in Huang supporting the Examiner's assertion that any section or subsection of Huang describes the application of a preprocessing function at a display workstation.

The Examiner also cites to section 8.6 of Huang for the proposition that a PACS module can function as an individual unit, where an acquisition workstation and display workstation are the same. (Dec. 10, 2004 Office Action, page 15.) The Applicant respectfully disagrees.

First, while the Applicant does agree with the Examiner that Huang discloses a PACS module that, "[i]n practice, . . . can function alone as an individual unit in which the display workstations show images from the imaging devices." (Huang, section 8.6, page 216.) However, the Applicant argues that all display workstations show images from imaging devices under Huang. In other words, Huang does not disclose any component of the PACS system other than the display workstations as being capable of displaying images. Therefore, the statement in Huang that "display workstations show images from the imaging devices" (in a PACS module functioning alone as an individual unit) is insufficient to teach or suggest the application of any preprocessing functions to image data at a display workstation. In short, there is no support for the argument that since Huang describes a PACS module functioning as a single

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unit, where the module includes display workstations and imaging devices, Huang teaches or suggests the application of preprocessing functions at the display workstations.

Second, the only disclosure in Huang of a preprocessing function applied to image data in a PACS module occurs at the DICOM US PACS Gateway. (Huang, section 8.6, page 218.) That is, while Huang does describe a PACS module (including display workstations and imaging devices) functioning as a single unit, the only disclosure of any preprocessing function applied in the PACS module occurs at a DICOM US PACS Gateway, a component of the PACS module. (Huang, section 8.6, page 218, figure 8.12.) Specifically, Huang describes the following functionality of the DICOM US PACS Gateway in a PACS module:

In the DICOM gateway, several processes are running concurrently. The first one is a daemon constantly checking for new US examinations arriving from scanners. When one is found, the device sends it to a second process to convert the file to **DICOM format**. Because a color US image file is normally large . . . a third process compresses it to a smaller file, normally with a 3:4 ratio.

(Huang, section 8.6, page 218.) In other words, Huang describes the DICOM US PACS Gateway as performing two actions on image data received from an imaging device: (1) converting the image data to DICOM format and (2) reducing the size of the image data file. Huang describes both of these actions as preprocessing functions applied to image data at an acquisition workstation:

There are two categories of preprocessing functions. The first is related to the image format—for example, a conversion from the manufacturer format to DICOM. . . . The second type of preprocessing prepares the image for an optimal viewing at the display workstation. To achieve optimal display, an image should have proper size

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(Huang, section 8.7, page 219.) Therefore, Huang is devoid of any teaching or suggestion of applying a preprocessing function in a PACS module (or any other part or whole of a PACS system) other than at an acquisition gateway/workstation or the DICOM US PACS Gateway.

In conclusion, the Applicant continues to assert that Huang does not teach or suggest the application of any preprocessing functions to image data at a display workstation. Huang's generic reference to "a workstation" in section 8.8.2 refers to a workstation in the context of Huang's description of the functions performed by an acquisition workstation, and not a display workstation. Huang's disclosure of a PACS module functioning as an individual unit provides no support for the assertion that display workstations of the module perform preprocessing of the image data. In fact, the only disclosure in Huang of any preprocessing functions applied to image data in a PACS module occurs at an acquisition gateway/workstation or the DICOM US PACS Gateway, and not at a display workstation.

The Applicant now turns to the rejection of claims 1, 3, 5, 7, 8, 10, 12, 14, 15, 17 and 19 under 35 U.S.C. § 103(a) as being unpatentable over Huang. Huang discloses an image acquisition gateway computer that acquires images from different imaging modalities (Huang, section 8.1, page 199, lines 1-3). Once the raw image data is received at the acquisition computer, a sequential progression of functions are applied to the raw image data to completely and fully preprocess the raw image data (Huang, section 8.8.1, pages 224-225). That is, after the raw image data leaves the acquisition computer, the image data has been fully preprocessed.

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As described above, the display workstations of Huang do not perform any additional preprocessing of the image data. The only function performed by the display workstations is the processing of the image data. (Huang, section 8.7.) The display workstations of Huang therefore do not have the capability of applying preprocessing functions to image data that has been partially preprocessed by the acquisition computer. Huang merely describes the full and complete preprocessing of raw image data at an acquisition computer to create fully preprocessed image data. The fully preprocessed image data of Huang may be retrieved by a display workstation, but the display workstation of Huang is incapable of applying preprocessing functions to the fully preprocessed image data. The display workstation is merely able to process (but not preprocess, as described above) the fully preprocessed image data.

Huang therefore describes a PACS system where all initial preprocessing decisions are imposed on all subsequent viewers of the image data. The complete and full preprocessing of image data at the acquisition computer completely prevents any subsequent viewer of image data from customizing the preprocessing of image data to suit his or her needs. That is, a subsequent viewer is "stuck" with the preprocessing functions applied to image data at the acquisition computer. The subsequent viewer in Huang is incapable of directing the display workstation to apply any preprocessing function to customize the presentation of the image data for the viewer.

As such, Huang does not teach or suggest 1) applying, at the image acquisition workstation, at least one and fewer than all of the preprocessing functions to the raw image data to form partially preprocessed raw image data and 2) storing the partially preprocessed raw image data in the preprocessing database, where at least one of the preprocessing functions is

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subsequently applied to the partially preprocessed raw image data at a display workstation, as recited in claim 1.

Huang also does not teach or suggest 1) applying, at the image acquisition workstation, at least one and fewer than all of predetermined preprocessing functions to the raw image data to form partially preprocessed raw image data and 2) transmitting the partially preprocessed raw image data to a PACS network for storage in a preprocessing database, where at least one of the preprocessing functions is subsequently applied to the partially preprocessed raw image data at a display workstation, as recited in claims 7 and 14.

Huang also fails to disclose a PACS network that includes a preprocessing database and an image database, where the preprocessing database is utilized for storing the partially preprocessed raw image data and the image database is utilized for storing fully preprocessed image data, as recited in claim 1. There is no disclosure in Huang discussing two databases for the storage of partially preprocessed image data and fully preprocessed image data separately. The Examiner has once again asserted that “[i]t would be inherent to include a preprocessing database and an image database, the preprocessing database utilized for storing the partially preprocessed raw image data, the image database utilized for storing a fully preprocessed image data.” (Aug. 11, 2004 Office Action, pages 6-7 and Dec. 10, 2004 Office Action, page 12.) Thus, the Examiner is again asserting that a claim element missing from a cited reference is inherently present in the disclosure of the cited reference. According to MPEP § 2112(IV):

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic.

...

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"To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'"

MPEP § 2112(IV) (citations omitted) (emphasis added).

In order for the Examiner to "rely[] upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." MPEP § 2112(IV) (citing *Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (B.P.A.I. 1990) (emphasis added)). In support of the Examiner's inherency argument, the Examiner relies on the statement "Huang discloses databases (Sect. 7.1.2-7.1.3; Sect. 8.1; Sect. 8.3.1)." (Dec. 10, 2004 Office Action, page 11.) As described in the previous response to the Aug. 11, 2004 Office Action (Nov. 8, 2004 Amendment, pages 13-17), this statement alone is insufficient to constitute "a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." (MPEP § 2112(IV)) (emphasis in original).

Once again, the Applicant asserts that the Examiner's citation to three sections of Huang fails to provide any "basis in fact and/or technical reasoning" for the inherency argument. First, section 7.1.2 merely discloses a singular PACS database server with an enumerated list of functions. (Huang, section 7.1.2, pages 178-179.) Huang merely discloses a singular PACS database server and does not include any disclosure of multiple databases, such as a preprocessing database and an image database, as recited in claim 1.

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In addition, Huang clearly enumerates the limited functions performed by the singular PACS database server. The list of functions consists of:

1. Radiology registration;
2. PACS (RIS) Technologists;
3. Acquisition computers;
4. Case management;
5. Study interpretation;
6. Report transcription;
7. Radiology administrative; and
8. Research.

(Huang, figure 7.2, page 179.) Nowhere in this list is disclosed any storage of partially preprocessed raw image data or fully preprocessed image data, as recited in claim 1. As such, section 7.1.2 cannot possibly provide any "basis in fact and/or technical reasoning" for the Examiner's assertion of inherency.

Next, the Examiner's citation to section 7.1.3 of Huang also fails to provide any support for similar reasons. Section 7.1.3 of Huang discloses a database included in a display workstation. Huang again clearly itemizes the operations of the workstation database. These operations are limited to:

1. Case preparation - accumulation of all relevant images and information belonging to a patient examination;
2. Case selection - selection of cases for a given subpopulation;
3. Image arrangement - tools for arranging and grouping images for easy review;
4. Interpretation - measurement tools for facilitating the diagnosis;

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5. Documentation - tools for image annotation, text, and voice reports; and
6. Case presentation - tools for a comprehensive case presentation.

(Huang, table 7.2, page 180.) Nowhere in this list is disclosed any storage of partially preprocessed raw image data or fully preprocessed image data. Therefore, section 7.1.3 of Huang merely discloses a singular database and does not disclose any storage of partially or fully preprocessed image data in the database. Huang therefore does not teach or suggest a PACS network with a preprocessing database and an image database, where the preprocessing database is utilized for storing the partially preprocessed raw image data and the image database is utilized for storing fully preprocessed image data, as recited in claim 1. As such, section 7.1.3 cannot possibly provide any "basis in fact and/or technical reasoning" for the Examiner's inherency argument.

Next, the Examiner's citation to sections 8.1 and 8.3.1 also fails to provide support for the Examiner's inherency argument. Section 8.1 merely describes a "PACS controller (server) to archive" images from different imaging modalities. (Huang, section 8.1, page 199.) Section 8.3.1 merely describes "an image archiving system" for receiving a formatted image (where a formatted image is an acquired image that is organized based on a standard format, such as DICOM, by a formatting program)." (Huang, section 8.3.1, page 207.) The two sections cited by the Examiner merely describe singular storage media for the storage of images. However, these sections do not provide any basis in fact or technical reasoning to support the Examiner's argument that separate databases for the storage of partially and fully preprocessed image data are inherent in singular archive systems. For example, as Huang does not disclose the partial

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preprocessing of image data, (*see* remarks above and Huang, section 8.8.1, pages 224-225), Huang does not provide any basis for separate databases for the storage of partially and fully preprocessed image data. In other words, as Huang does not teach partially preprocessed data, Huang has no teaching of a separate database for storing partially preprocessed image data. These sections of Huang therefore do not provide any basis or reasoning for the Examiner's inherency argument.

The Applicant continues to assert that none of the sections of Huang cited by Examiner provide any "basis in fact and/or technical reasoning" for the Examiner's inherency argument. Therefore, the Applicant respectfully traverses the Examiner's argument. Once again, the Applicant respectfully requests that the Examiner provide evidence to support her inherency argument. (*see* previous request on page 17 of the Nov. 8, 2004 Amendment.) In addition, to the extent that the Examiner may support the above assertion with Official Notice, the Applicant respectfully requests substantiation of such Official Notice.

The present rejection encompasses claims 1, 3, 5, 7, 8, 10, 12, 14, 15, 17, and 19. The Applicant respectfully submits that Huang does not teach or suggest elements of at least claims 1, 7 and 14. Claims 3, 5, 8, 10, 12, 15, 17, and 19 depend from claims 1, 7 and 14. Therefore, the Applicant respectfully submits that claims 1, 3, 5, 7, 8, 10, 12, 14, 15, 17, and 19 should be allowable.

The Applicant next turns to the rejection of claims 4, 6, 11, 13, 18 and 20 under 35 U.S.C. § 103(a) as being unpatentable over Huang in view of Takeo. As described above and in

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previous responses to Office Actions, Takeo does not remedy the shortcomings of Huang, as described above. Specifically, Takeo describes a method and apparatus for reproducing an image via two image reproducing devices wherein gradation and/or sharpness correction is performed for both images reproducing devices. The disclosure of Takeo describes receiving an image signal, applies a first processing condition to the image signal for display on a computer screen, applies a second processing condition to the image signal for printing the image on film, stores these two processing conditions, displays the image on the computer screen and prints the image on film (col. 5, lines 64-68; col. 6, lines 1-31).

The processing conditions applied in Takeo fully and completely process the image data for the display and printing of the image data (col. 6, lines 37-45.) The image processing means of Takeo is the only disclosed component of the Takeo apparatus that performs any processing of image data. Takeo does not teach or suggest any additional image processing or preprocessing by any component other than the image processing means. Takeo merely describes a single component that processes image data once for each output device (col. 6, lines 37-45.)

As such, Takeo does not remedy the shortcomings of Huang, as described above. Specifically, Takeo does not teach or suggest 1) applying, at the image acquisition workstation, at least one and fewer than all of the preprocessing functions to the raw image data to form partially preprocessed raw image data and 2) storing the partially preprocessed raw image data in the preprocessing database, where at least one of the preprocessing functions is subsequently applied to the partially preprocessed raw image data at a display workstation, as recited in claim 1.

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Takeo also does not teach or suggest 1) applying, at the image acquisition workstation, at least one and fewer than all of predetermined preprocessing functions to the raw image data to form partially preprocessed raw image data and 2) transmitting the partially preprocessed raw image data to a PACS network for storage in a preprocessing database, where at least one of the preprocessing functions is subsequently applied to the partially preprocessed raw image data at a display workstation, as recited in claims 7 and 14.

Moreover, assuming for the sake of argument that one would be motivated to combine Huang and Takeo, the combination would similarly fail to teach or suggest elements of at least claims 1, 7 and 14. As stated above, neither Huang nor Takeo teach or suggest 1) applying, at the image acquisition workstation, at least one and fewer than all of the preprocessing functions to the raw image data to form partially preprocessed raw image data and 2) storing the partially preprocessed raw image data in the preprocessing database, where at least one of the preprocessing functions is subsequently applied to the partially preprocessed raw image data at a display workstation, as recited in claim 1. Similarly, as stated above, neither Huang nor Takeo teach or suggest 1) applying, at the image acquisition workstation, at least one and fewer than all of predetermined preprocessing functions to the raw image data to form partially preprocessed raw image data and 2) transmitting the partially preprocessed raw image data to a PACS network for storage in a preprocessing database, where at least one of the preprocessing functions is subsequently applied to the partially preprocessed raw image data at a display workstation, as recited in claims 7 and 14.

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Therefore, as elements of at least claims 1, 7 and 14 are not taught or suggested by Huang and Takeo, alone or in combination, the Applicant respectfully submits that a combination of Huang and Takeo fails to teach or suggest elements of at least claims 1, 7 and 14.

The present rejection encompasses claims 4, 6, 11, 13, 18 and 20. The Applicant respectfully submits that neither Huang nor Takeo, alone or in combination, teach or suggest elements of claims 1, 7 and 14. Claims 4, 6, 11, 13, 18 and 20 depend from claims 1, 7 and 14. Therefore, the Applicant respectfully submits that claims 4, 6, 11, 13, 18 and 20 should be allowable.

Therefore, the Applicant respectfully submits that the claims of the present application should be allowable over the prior art.

• FROM McANDREWS, HELD, & MALLOY

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CONCLUSION

If the Examiner has any questions or the Applicant can be of any assistance, the Examiner is invited and encouraged to contact the Applicant at the number below.

The Commissioner is authorized to charge any necessary fees or credit any overpayment to the Deposit Account of GTC, Account No. 50-2401.

Respectfully submitted,

Date: February 10, 2005


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